PUBLIC HEALTH REPORTS

VOL. 52 DECEMBER 24, 1937 NO. 52

PREVALENCE OF COMMUNICABLE DISEASES IN THE UNITED STATES

November 7–December 4, 1937

The accompanying table summarizes the prevalence of eight important communicable diseases based on weekly telegraphic reports from State health departments. The reports from each State are published in the Public Health Reports under the section "Prevalence of Disease." The table gives the number of cases of these diseases for the 4-week period ending December 4, the number reported for the corresponding period in 1936, and the median number for the years 1932–36.

DISEASES ABOVE MEDIAN PREVALENCE

Measles.—The number of cases of measles (15,867) reported for the 4 weeks ended December 4 was more than twice the incidence of the preceding 4-week period. An increase in the disease is expected at this season of the year. Measles, however, has been at a relatively high level for several months, and the current incidence is about 4.6 times that for the corresponding period in 1936 and about 2.3 times the incidence for this period in 1935. The highest incidence was reported in the Central and Middle Atlantic sections, where the number of cases was approximately 10 times that for last year. The New England section alone reported a normal seasonal incidence.

Smallpox.—For the current period 910 cases of smallpox were reported, as compared with 333, 928, and 376 for the corresponding period in the years 1936, 1935, and 1934, respectively. The highest incidence is still confined to those regions where this disease has been unusually prevalent for the past 2 or 3 years, namely, the North Central, Mountain, and Pacific regions, but during recent weeks the incidence in the East South Central region has been considerably above normal. The North Atlantic region reported no cases, the South Atlantic 6 cases, and the West South Central 22 cases, an average normal expectancy.

Influenza.—The 4,995 cases of influenza reported exceeds only slightly the number reported for the corresponding period of 1936, which was a period of average seasonal incidence. The greater part of the increase during the current period was reported from the West South Central region.

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Meningococcus meningitis.—During the current 4-week period, 279 cases of meningococcus meningitis were reported—approximately 75 percent of the number for the corresponding period in 1936. In 1935, 1934, and 1933, the numbers of cases for this period totaled 288, 129, and 157, respectively. While the incidence was low in relation to last year, it was considerably above the 1932–36 median for this period. A comparison of geographic regions shows that the disease was somewhat above the average seasonal level in the South Atlantic, South Central, and Pacific regions, low in the East North Central and Mountain regions, and about normal in the North Atlantic and West North Central regions.

DISEASES BELOW MEDIAN PREVALENCE

Diphtheria.—The number of cases of diphtheria (3,676) was the lowest reported during this period for the last 9 years. In 1936, 3,804 cases were reported during this period, and in 1935, 5,162 cases were reported. The West South Central and Mountain regions reported appreciable increases over last year, while the West North Central, East South Central, and South Atlantic regions reported significant decreases. The steady decline in diphtheria has been somewhat interrupted during the current year; and for the first time since the middle of the year the total number of cases for a 4-week period fell below that for the corresponding period of last year. The incidence has, however, remained well below the median level of preceding years.

Poliomyelitis.—The number of reported cases of poliomyelitis was lower than it was at this time last year in all sections of the country except the New England and Pacific regions. For the current period the number of cases totaled 312, as compared with 543, 509, and 332 for the corresponding period in 1936, 1935, and 1934, respectively. As compared with the experience of the years 1932–36, the incidence in the Middle Atlantic, South Atlantic, and East North Central regions was low, but in all other regions the number of cases remained above the normal seasonal level.

Typhoid fever.—For the country as a whole the incidence of typhoid fever continued to be low. For the 4 weeks ended December 4 there were 947 cases reported, which represents a decline of approximately 25 percent from last year's figure (1,245) for this period. In 1935, 1934, and 1933 the numbers of cases totaled 1,061, 1,482, and 1,376, respectively. The current incidence is the lowest recorded for this period in the 9 years for which these data are available.

Scarlet fever.—The number of cases (17,052) of scarlet fever was about 15 percent in excess of that for the corresponding period in 1936, but it was lower than the number reported in each of the 3

preceding years. In the Middle Atlantic, South Atlantic, East South Central, and Pacific regions the current incidence was below the normal seasonal incidence, but in all other regions it was relatively high. The New England States reported about a 35 percent increase over last year and the North Central regions a 25 percent increase. The 837 cases reported from the West South Central region was the highest number reported during this period in recent years.

Number of reported cases of 8 communicable diseases in the United States during the 4-week period Nov. 7–Dec. 4, 1937, the number for the corresponding period in 1936 and the median number of cases reported for the corresponding period 1932–36 [1]

Division	Current period	1936	5-year median	Current period	1936	5-year median	Current period	1936	5-year median	Current period	1936	5-year median
	Diphtheria			Influenza [2]			Measles [3]			Meningococcus meningitis		
United States [1]	3,676	3,804	5,239	4,495	3,650	3,685	15,867	3,477	8,598	279	378	221
New England	59	53	92	25	23	24	898	1,016	1,055	9	11	11
Middle Atlantic	352	312	499	104	94	77	6,264	766	2,141	39	66	40
East North Central	636	574	1,119	411	265	427	3,295	322	822	35	76	59
West North Central	306	349	545	168	325	258	1,901	144	767	21	25	17
South Atlantic	948	1,311	1,311	1,209	1,233	1,244	1,704	438	852	74	84	27
East South Central	409	553	832	699	466	430	627	74	124	57	51	17
West South Central	514	339	917	1,402	744	822	231	100	100	17	16	8
Mountain	238	76	106	278	219	185	637	441	556	7	21	15
Pacific	214	237	228	199	281	265	310	176	881	20	28	12
	Poliomyelitis			Scarlet fever			Smallpox			Typhoid fever		
United States [1]	312	543	332	17,052	14,695	17,714	910	333	408	947	1,245	1,245
New England	12	6	7	1,126	830	1,051	0	0	0	35	17	24
Middle Atlantic	35	46	51	2,837	2,677	3,311	0	0	0	136	195	177
East North Central	45	125	54	5,666	4,523	5,161	129	38	103	95	220	195
West North Central	49	59	29	2,776	2,246	2,016	334	129	113	65	125	94
South Atlantic	16	53	30	1,378	1,413	1,597	6	0	5	139	209	228
East South Central	31	53	19	696	657	892	62	1	9	77	185	184
West South Central	41	123	18	837	367	476	22	17	21	288	181	215
Mountain	15	29	12	815	799	799	191	84	68	70	63	75
Pacific	68	49	49	921	1,183	1,172	166	64	64	42	50	65

[1] 48 States. Nevada is excluded, and the District of Columbia is counted as a State in these reports.
[2] 44 States and New York City. The median is for the years 1933–36 only; the data for 1932 are not comparable.
[3] 46 States. Mississippi and Georgia are not included.

MORTALITY, ALL CAUSES

The average mortality rate from all causes in large cities for the 4 weeks ended December 4, based on data received from the Bureau of the Census, was 11.2 per 1,000 inhabitants (annual basis). The rate was normal for this season of the year; the average rate for the corresponding period in the years 1932–36 was also 11.2.

EFFECT OF ADDITION OF DITHIOETHYLAMINE (CYSTINE AMINE) TO THE DIET OF THE ALBINO RAT

By W. H. SEBRELL, *Surgeon*, R. H. ONSTOTT and D. J. HUNT, *Passed Assistant Surgeons*, and R. D. LILLIE, *Surgeon, United States Public Health Service, National Institute of Health*

Sullivan, Hess, and Sebrell (1931) reported that albino rats fed a 4-percent casein diet supplemented with 0.5 percent of a preparation of cystine amine dihydrochloride, melting at 203° C., showed greater gains in weight than rats fed on an unsupplemented 4-percent casein diet. However, the increase in body weight was not as great as that obtained by supplementing the diet with 0.5 percent cystine. They concluded that cystine amine could replace cystine to a considerable degree for the purpose of growth of young white rats. Mitchell (1935), using a paired feeding method, failed to confirm this finding and reported that the addition of a preparation of cystine amine, melting at 212° to 213° C., to a cystine-deficient diet definitely depresses its growth-promoting value. By calculation of the data published by Mitchell, the average daily gain in weight of the rats on his basal diet was 0.71 grams, on his basal diet plus cystine, 0.75 grams, and on his basal diet plus cystine amine, 0.64 grams. The basal diet contained 27.2 percent of dry skim-milk powder. Jackson and Block (1936), using a different experimental method and a recrystallized cystine amine with a melting point of 215°, also failed to confirm the finding of Sullivan, Hess, and Sebrell, and observed no appreciable increase in the body weight of rats on the addition of 0.448 percent of cystine amine to a basal diet containing 15 percent of whole milk powder. They conclude that cystine amine is devoid of growth-promoting properties under the stated conditions. Their report, however, is based on experimental data from only three rats, which they state were selected for the experiment because their body weights were most nearly stationary. In our experience normal, young albino rats show an appreciable gain in weight on the 4-percent casein diet, as indicated by the weight curves of the rats in figure 1. It was felt, therefore, that the difference in results might be due to differences in experimental technique, particularly since Jackson and Block did not repeat the experiment of Sullivan, Hess, and Sebrell.

It was decided, therefore, to duplicate as nearly as possible, with rat litter mates, the original experiments of Sullivan, Hess, and Sebrell. This could not be done exactly, since the same strain of rats was not always available and changes had been made in the stock diet of the rat-breeding colony. It was necessary also to use new lots of cystine amine dihydrochloride.[1] The first lot of cystine amine fur-

[1] The cystine amine dihydrochloride was prepared by Dr. M. X. Sullivan and Dr. W. C. Hess of Georgetown University. These experiments were made possible by their cooperation in furnishing us with the material.

nished us for the present experiment was reported by Sullivan and Hess to have been recrystallized (to a melting point of 219° C., corrected) from the cystine amine used in the experiment of Sullivan, Hess, and Sebrell. Later lots were reported also to have been made by the Gabriel synthesis and recrystallized. A melting point determination on the last lot furnished us gave sintering at 212° C. and melted at 214.5 to 215.5° C. (corrected). In view of the unexpected results obtained in the first animal experiment, additional experiments were added in order to secure further data on the nature of the bone changes that occurred.

Experiment I

Litter mates of young albino rats weighing from 45 to 54 grams each were separated into three lots of four rats each and placed in individual cages. The composition of the experimental diets used in all of the experiments is given in table I. One lot (1491) was offered the basal diet no. 349. One lot (1492) was offered the same diet with the addition of 0.5 percent cystine amine dihydrochloride (diet 364), and one lot (1493) was offered the same diet with the addition of 0.5 percent l-cystine (diet 349–A). Within 12 days two of the rats on the cystine amine diet (364) were dead with evidence of extensive bone changes on X–ray examinations, and a third was killed, when moribund, on the 15th day for a study of the pathology. The fourth rat died on the 24th day.

TABLE 1.—*Composition of diets*

Ingredient	Diet 349	Diet 349–A	Diet 364	Diet 470	Diet 471	Diet 472	Diet 473
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Casein (purified) [1]	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Salt mixture [2]	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Cod liver oil [3]	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Cottonseed oil [4]	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Brewer's yeast (dried)	5.0	5.0	5.0	15.0	15.0	15.0	15.0
Cornstarch (commercial)	82.0	81.5	81.5	72.0	71.5	71.5	71.0
l-cystine (C. P.)		.5			.5		.5
Cystine amine (dihydrochloride)			.5			.5	.5

[1] Commercial casein leached for a week in daily changes of acidulated water, according to the method of McCollum, Simmonds, Shipley, and Park, Bull. Johns Hopkins Hosp. 33: 398 (1922).
[2] Prepared according to the method of Osborne and Mendel, J. Biol. Chem. 37: 557 (1919).
[3] U. S. P.
[4] Wesson Oil.

Two of the rats on the cystine diet (349–A) were changed to the cystine-amine diet (364) on the 14th day of the experiment. They steadily lost weight and were dead on the 30th day and 41st day respectively, following the change in diet, while the remaining two rats continued to gain steadily in weight to the end of the experiment, on the 65th day. On the 65th day two of the rats on the basal diet (349) were changed to the cystine-amine diet (364). These animals had gained 69 and 64 grams, respectively, from the beginning of the

experiment. Following the change to the cystine-amine diet they steadily lost weight until the experiment was terminated on the 103d day. This was 38 days after the change to the cystine-amine diet (364), during which time they lost 51 and 42 grams, respectively, in body weight, while the controls continued to gain slowly as shown in figure 1.

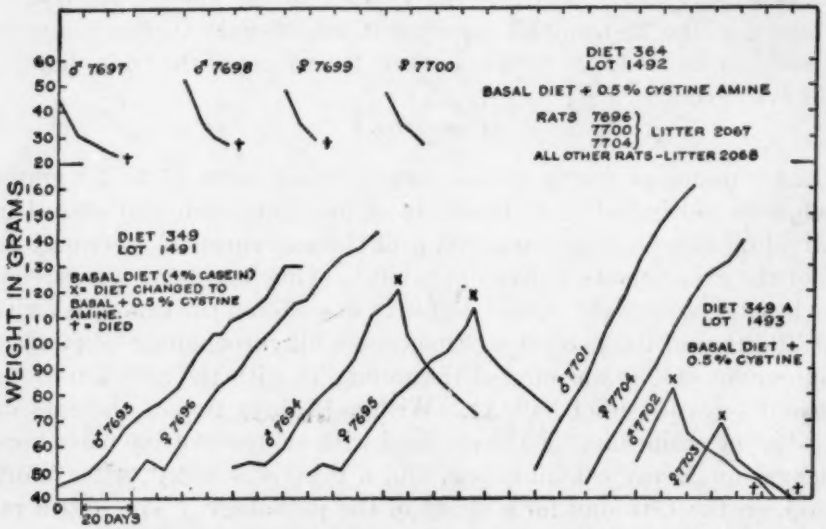

FIGURE 1.—Individual weight curves for rats in Experiment I.

Experiment II

Experiment I was repeated with three additional lots of litter mates of four rats each, as indicated in figure 2, without making any change in the diets of the control animals. Two of the rats on the cystine-amine diet (364) died on the 18th and 21st days, respectively, after a rapid and progressive loss in weight, and at autopsy showed extensive bone changes, which were confirmed by X-ray examinations. The remaining two rats were killed on the 21st day, when they were in very bad condition, having lost 26 and 25 grams, respectively, in body weight since the beginning of the experiment. The lot on the basal diet (349) gained from 11 to 21 grams in body weight during the same period, while the lot on the cystine diet (349–A) gained from 23 to 37 grams.

Experiment III

In order to eliminate the possibility of too small an amount of yeast being a factor, and also to obtain further proof as to the cause of death of the animals on the cystine-amine diets, an additional experiment was run with four lots of litter mates as indicated in figure 3.

One lot (1602) was offered diet 470, which is identical with our basal diet 349, except that the dried brewer's yeast is increased to 15 percent and the cornstarch correspondingly reduced.

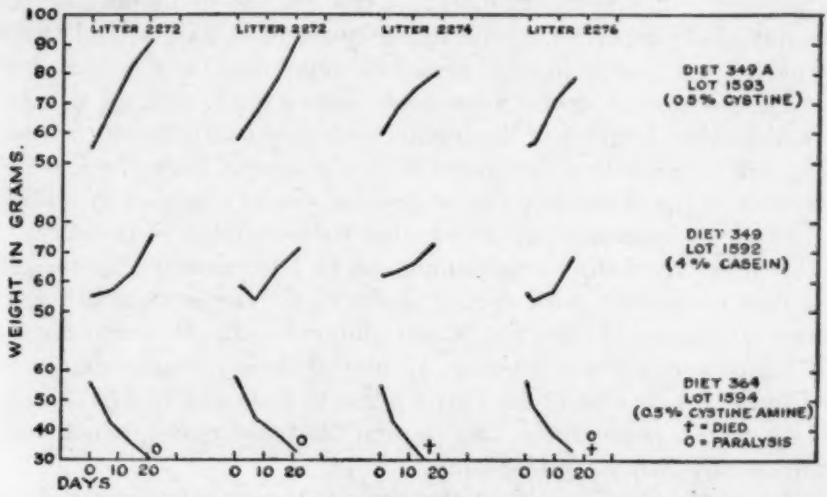

FIGURE 2.—Individual weight curves for rats in Experiment II.

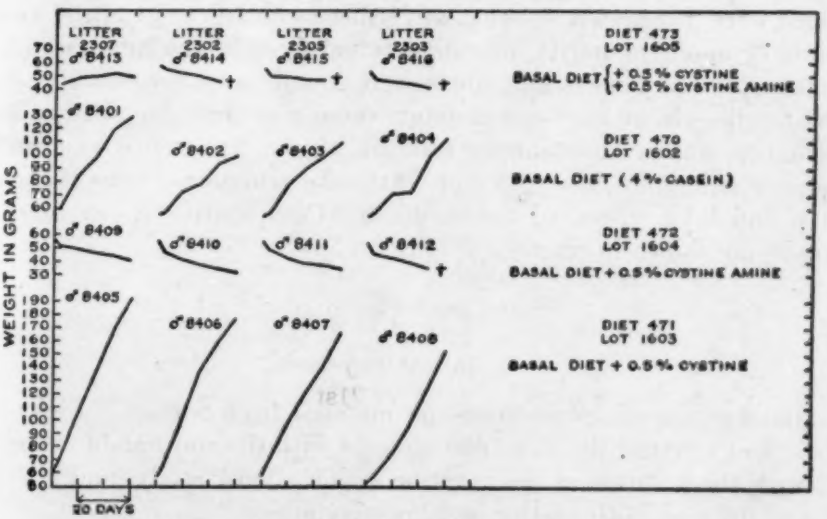

FIGURE 3.—Individual weight curves for rats in Experiment III.

There was a considerable difference between the rate of growth of these animals and those on diet 349. At the end of the 30-day experimental period the four rats had gained 70, 44, 56, and 69 grams, respectively.

One lot (1603) was offered a similar diet containing 0.5 percent cystine (471). The gains in body weight were also greater than those obtained by supplementing diet 349 with an equal amount of cystine.

At the end of the 30-day experimental period the four rats had gained 132, 120, 109, and 101 grams, respectively.

One lot (1604) was offered a similar diet containing 0.5 percent cystine-amine dihydrochloride (472). One rat was found dead on the 28th day of the experiment after losing 19 grams in weight, and at the end of the 30-day experimental period the remaining three animals had lost 18, 21, and 24 grams in weight, respectively, and at autopsy showed marked fragility of the femurs with excessive callus formation. X-ray examination revealed much more widespread bone changes.

In view of the consistently large gains in weight obtained by adding cystine to the basal diet, it was felt that the possibility of the effect of factors other than the cystine amine might be eliminated by the use of a diet containing both cystine and cystine amine. Accordingly, one lot (1605) was fed diet 473, which contains both 0.5 percent cystine and 0.5 percent cystine amine. All four of the experimental animals died in 24, 26, 29, and 32 days after a loss in body weight of 12, 8, 12, and 10 grams, respectively, and showed the bone lesions, which were confirmed by X-ray examination.

In all of the above-reported experiments the rats that received the cystine amine showed evidence of serious and extensive bone changes, which were manifested before death either as enlargement of the knee joints or apparent partial or complete paralysis of the hindquarters. At autopsy the femurs and tibiae were found to be exceedingly soft and fragile. In at least one instance there was irregular, soft, callus formation and a spontaneous fracture of the femur had occurred. X-ray photographs, revealed more extensive generalized bone changes than had been suspected before death. Comparative X-ray photographs are shown in figures 4–7.

Pathologic Histology

By R. D. Lillie, *Surgeon*

Histologic studies were made on material from 28 rats. Eight of these had received the basal diet alone, 4 with the addition of cystine, 12 with the addition of the "cystine amine" under study, and 4 with the addition of both cystine and "cystine amine."

In the first 12 of these rats the diaphyseal cortex of the bones studied was thick and compact, the metaphyses showed regular parallel columns of ossifying bone applied to the smooth and regular epiphyseal cartilages, the epiphyses contained a moderate amount of cancellous bone and possessed a more or less complete cortical layer of bone against the articular and epiphyseal cartilages, the marrow was generally of cellular type, and the periosteum showed relatively minor amounts of subperiosteal fibroblast proliferation in the metaphyseal regions.

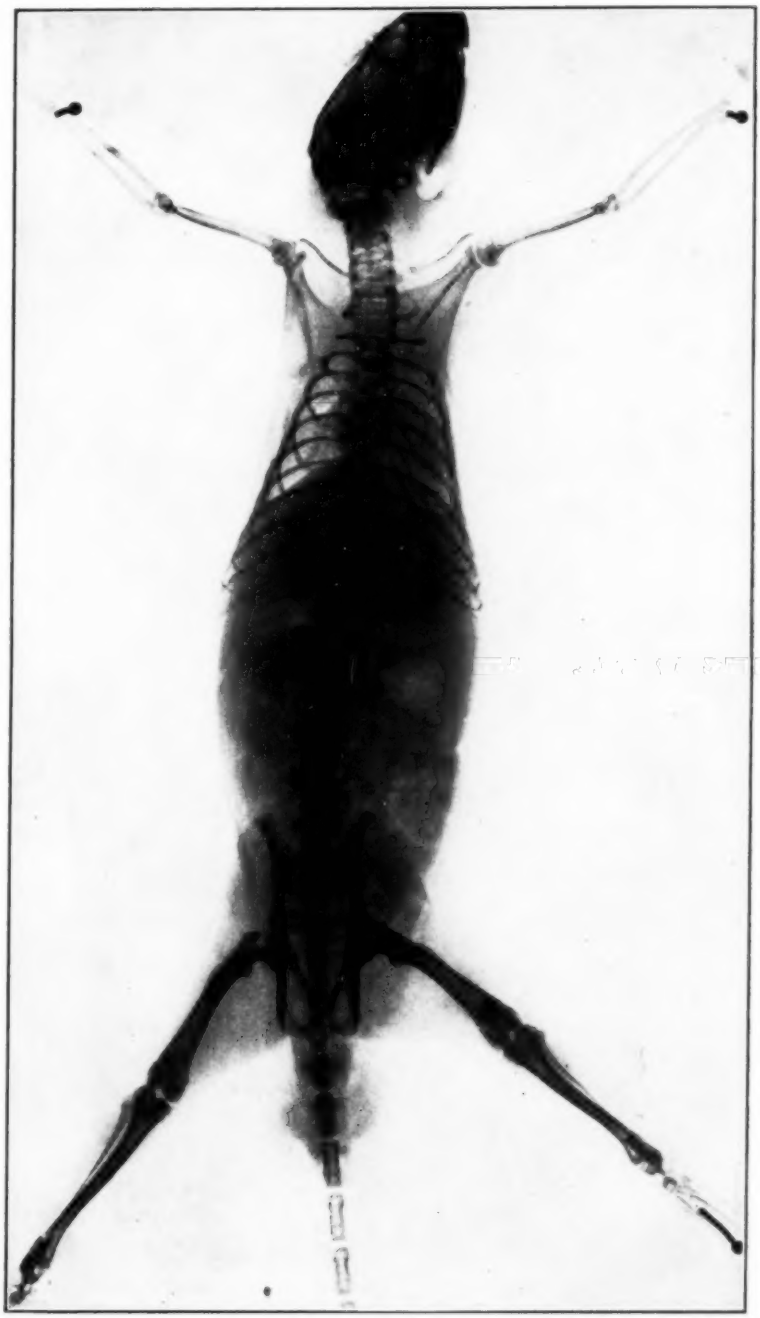

FIGURE 4.—Rat 8404 (lot 1602) from Experiment III. Basal diet.

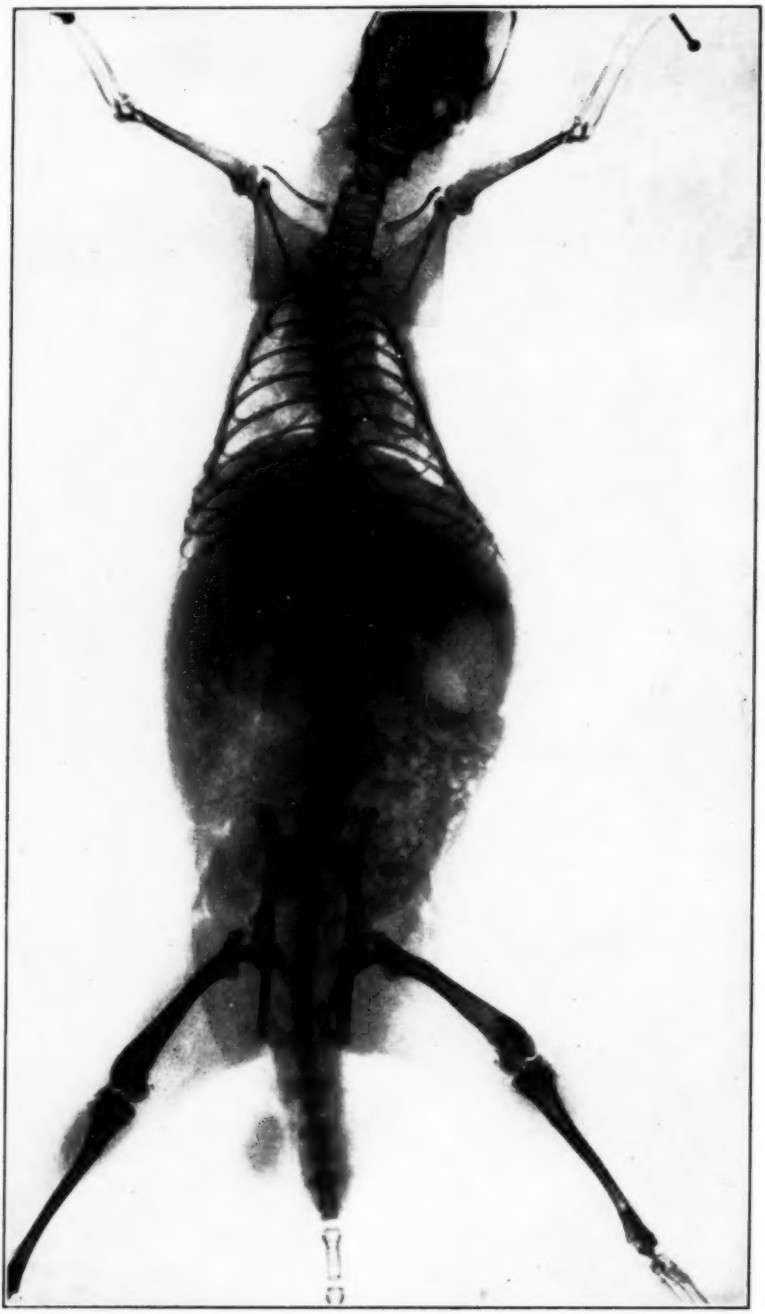

FIGURE 5.—Rat 8408 (lot 1603) from Experiment III. Basal diet+0.5 percent l-cystine.

FIGURE 6.—Rat 8412 (lot 1603) from Experiment III. Basal diet+0.5 percent cystine amine.

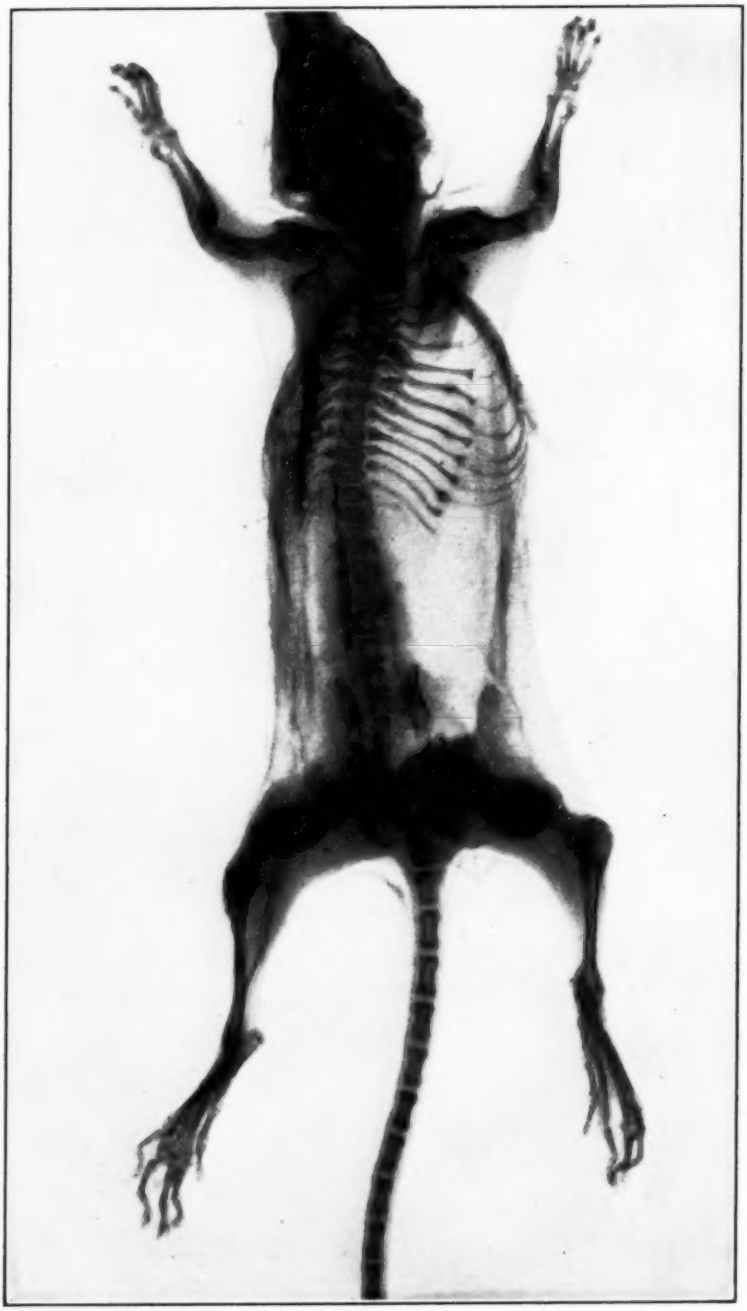

FIGURE 7.—Rat 8413 (lot 1605) from Experiment III. Basal diet+0.5 percent cystine+0.5 percent cystine amine.

FIGURE 8.

FIGURE 9.

FIGURE 10.

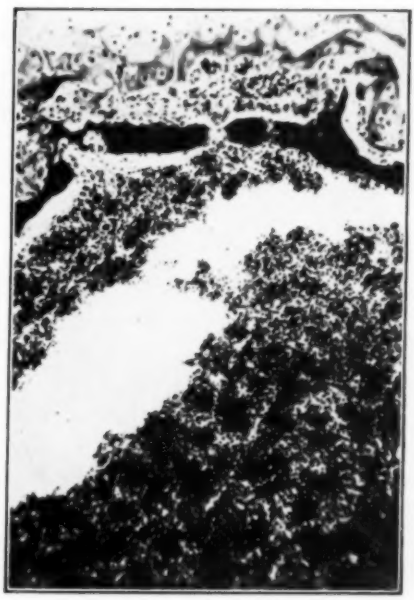

FIGURE 11.

FIGURE 8.—Tibia, diaphyseal cortex. (Basal diet.)
FIGURE 9.—Tibia, diaphyseal cortex. (Basal diet+0.5 percent cystine amine.)
FIGURE 10.—Tibia, epiphyseal cartilage and metaphysis. (Basal diet.)
FIGURE 11.—Tibia, epiphyseal cartilage and metaphysis. (Basal diet+0.05 percent cystine amine.)

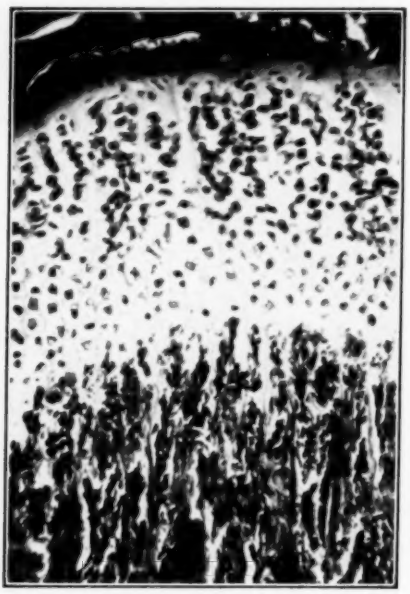

FIGURE 12.

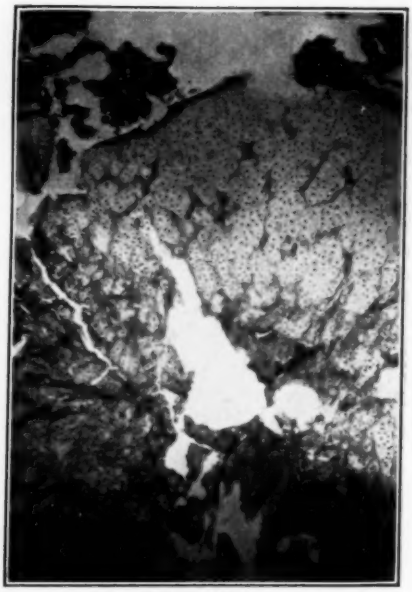

FIGURE 13.

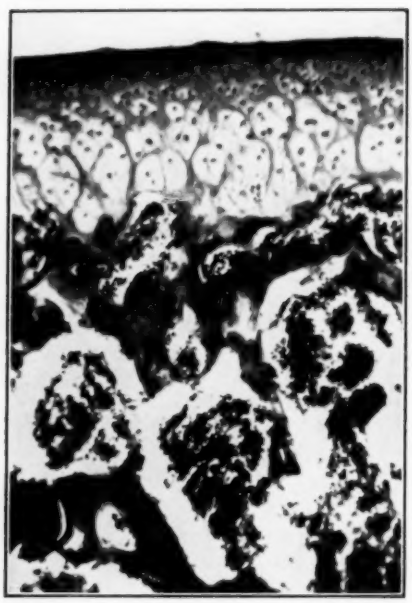

FIGURE 14.

FIGURE 15.

FIGURE 12.—Tibia, epiphyseal cartilage, higher magnification. (Basal diet.)
FIGURE 13.—Tibia, epiphyseal cartilage, higher magnification. (Basal diet+0.05 percent cystine amine.)
FIGURE 14.—Tibia, articular cartilage, proximal epiphysis. (Basal diet.)
FIGURE 15.—Tibia, articular cartilage, proximal epiphysis. (Basal diet+0.05 percent cystine amine.)

FIGURE 16.

FIGURE 17

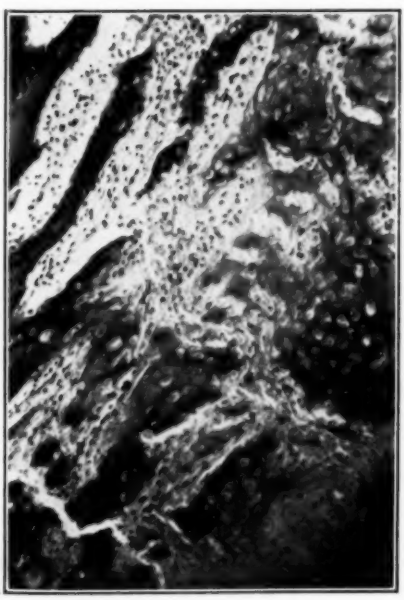

FIGURE 18.

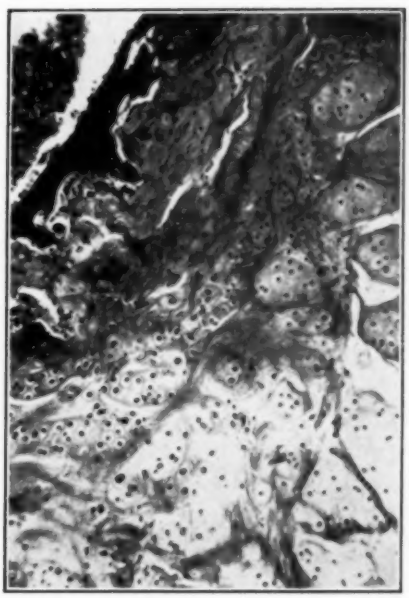

FIGURE 19.

FIGURE 16.—Tibia, cortex and periosteum, proximal metaphysis. (Basal diet.)
FIGURES 17, 18, and 19.—Same region. (Basal diet+5 percent cystine amine.)

In the remainder, all of which received "cystine amine", with or without added cystine, a very different picture was produced. The bony shafts of the long bones are often thinned, externally eroded, perhaps partly cancellous in structure, and often covered by more or less fibroblast proliferation on the periosteal surface. Figures 8 and 9 (pl. V) illustrate the contrast in cortical thickness. Metaphyseal bony columns may be entirely absent or replaced by a thin transverse bony lamella separating the marrow cavity from the epiphyseal cartilage. Figures 10 and 11 (pl. V) illustrate this contrast. The epiphyseal cartilages may show central splitting with a little calcification, swelling, proliferation, and rarefaction proceeding to breaking down and fibrin exudation, perhaps perforation by masses of proliferating fibroblasts. Figures 12 and 13 (pl. VI) contrast the normal and degenerating epiphyseal cartilages. The cancellous bone in the epiphyseal cavities is often greatly reduced in amount, the trabeculae are thinner, and cortical bone may be completely lacking from the surfaces covered by the articular and epiphyseal cartilages. When uncovered by bone the inner surfaces of these cartilages may be quite ragged in outline, and the articular cartilage may be considerably thinned. Figures 14 and 15 (pl. VI) contrast a normal epiphysis with one from a "cystine-amine" fed rat. The bone marrow often shows a much reduced cellularity accompanied by congestion, edema, and more or less focal or diffuse hemorrhage.

The periosteum over the metaphyses from the epiphyseal cartilages to the nearby diaphyseal region shows the most striking changes. Small to bulky irregular masses of new tissue are formed, consisting of masses of proliferating fibroblasts, areas of precartilaginous and cartilaginous tissues, of osteoid tissue, and cancellous bone with fibroblastic marrow, any of these alone or in various combinations. Focal hemorrhages may be found in the deeper layers in some animals, and sometimes fibroblast proliferation occurs outside the fibrous periosteum in the attached muscles. This periosteal reaction is decidedly reminiscent of fracture callus, yet definite fractures are not often recognizable. One instance was recorded in which the greatly thinned shaft cortex was impacted into the metaphyseal surface of the epiphyseal cartilage. These periosteal changes (figs. 17, 18, and 19, pl. VII) are contrasted with the slight reaction in the normal rat (fig. 16, pl. VII).

The alterations appear to consist in bone atrophy and erosion, degeneration of epiphyseal cartilages and cessation of metaphyseal bone growth, accompanied by a compensatory periosteal callus formation, either with or without demonstrable pathologic fractures. The other organs showed little of interest. The splenic follicles were generally smaller, and fewer lymphoid cells, megakaryocytes, and normoblasts were seen in the pulp with "cystine amine" than with

the other diets. Heart, kidney, pancreas, and adrenal were essentially normal and similar in the two groups. Lung and liver generally showed moderate congestion in the control groups and were relatively anemic in the "cystine amine" rats.

DISCUSSION

These results fail to confirm the findings of Sullivan, Hess, and Sebrell (1931), of Mitchell (1935), or those of Jackson and Block (1936), in regard to the physiological action of cystine amine. The loss in weight and the extensive bone pathology which occurred consistently in the rats on cystine amine in the present experiments were not seen in the rats on a similar diet reported by Sullivan, Hess, and Sebrell. Mitchell fed his cystine-amine preparation for 28 days and found a constant gain in weight, which was, however, less than the weight gain on his basal diet. If bone changes had occurred during this time, they probably would have been evident. Jackson and Block fed their cystine amine for a period of about 14 days, which may not have been long enough for the bone lesions to develop to a noticeable degree under their experimental conditions, although the fact that 2 of their 3 rats did not lose weight while on the cystine amine suggests that their cystine amine also may have been different from the material used in the present experiments. We have observed the bone changes in a group of 4 rats fed a basal diet similar to that used by Jackson and Block, supplemented by 0.5 percent of our present cystine-amine preparation.

The basal condition of the rats in the experiments herein reported do not exactly duplicate those of the experiments of Sullivan, Hess, and Sebrell. In addition to the change in the strain of rats and the change of the stock diet, the constituents of the basal experimental diets were necessarily from new lots of materials, which, however, were prepared in an identical manner. It seems doubtful that these changes could account for the difference in the results obtained.

In view of the striking bone changes obtained with our present preparation of cystine amine dihydrochloride, it would appear that any conclusion as to the physiological action of cystine amine is unjustified until further work is done.

CONCLUSION

Young albino rats on a low casein diet fed a substance furnished us as cystine amine dihydrochloride by Sullivan and Hess, rapidly lost weight and died. There was extensive bone pathology which appeared to consist of bone atrophy and erosion, degeneration of epiphyseal cartilages, cessation of metaphyseal bone growth, and compensatory periosteal callus formation.

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THE USE OF PURE STRAIN ANIMALS IN STUDIES ON NATURAL RESISTANCE TO TRANSPLANTABLE TUMORS [1]

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It is known that the growth of some transplantable tumors within the tissues of mice will induce immunity to subsequent reinoculation of the same tumor and other transplantable growths. This kind of resistance is known as concomitant immunity and has been discussed fully by Woglom (*17*, *18*) in his reviews on immunity to transplantable tumors.

There are several factors which are usually regarded as influencing the immunity induced in experimental animals by the growth of transplantable neoplasms. One is the inherent immunizing property of the tumor itself—Russell (*15*) found that some propagable tumors produce resistance in mice while others do not. Another is variation in the growth energy of the immunizing tumor. It is generally agreed that such a tumor, when growing slowly, fails to induce immunity to the same extent that it does when it undergoes normal development. Still another factor, and one which is concerned with the investigations to be reported at this time, is the constitution of the inoculated animals. In an earlier paper (*1*), dealing with concomitant resistance produced in mice by caudal inoculation of sarcoma 180, it was stated that mice highly susceptible to the tumor were unable to acquire immunity to the same extent as others which possessed some degree of natural resistance. In a later publication (*2*), it was noted that when inbred mice were used as test animals the results showed that the genetic constitution of the inoculated animals is of prime importance in the development of concomitant immunity. Bittner (*10*) has found that inbred stocks of mice gave pronounced differences in the growth rate of sarcoma 180 when inoculated subcutaneously at different sites. Six strains of mice which had been inbred brother-to-sister for at least 25 generations were used in his investigations, and it is clearly shown that strains of mice possessing a high degree of natural resistance to sarcoma 180 were more readily immunized than strains exhibiting a low degree of natural resistance.

The present studies were prompted by an observation made during a series of experiments (*3*) in which mice of strain M were inoculated cutaneously with sarcoma 37, when it was found that in these mice the

[1] From the Office of Cancer Investigations, U. S. Public Health Service, Harvard Medical School, Boston, Mass.

tumor grew rapidly in the skin for about 10 days, after which it receded spontaneously. This suggested the possibility of the use of tumors growing within the skin of mice as a test for the relative susceptibility of various inbred strains. Hence, this paper deals with the results of experiments in which two well-known propagable sarcomas were grown cutaneously in highly inbred strains of mice.

EXPERIMENTAL ANIMALS

Some of the mice were obtained from the Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine, while others were raised in this laboratory from litters procured from the Bar Harbor Laboratories. A brief description of the strains is presented in order to acquaint the reader with the extent of inbreeding and the susceptibility of the strains to the development of spontaneous neoplasms.

Strain A.—Inbred since 1918. The mice have undergone over 40 generations of inbreeding, and breeding females are susceptible to the development of spontaneous mammary gland tumors while both males and females exhibit a high incidence of spontaneous pulmonary growths.

Strain D.—Inbred since 1909. These mice are better known as the "Little dilute browns", and the breeding females develop spontaneous mammary carcinomas. The strain has been inbred for over 75 generations.

Strain C_3H.—Inbred since 1920. The strain has been inbred for over 40 generations and the breeding females exhibit a high incidence of spontaneous mammary gland carcinomas.

Strain C57 brown.—Inbred since 1921. Over 40 generations of inbreeding, with a medium incidence of tumors in breeding females.

Strain C57 black.—Inbred since 1921. Over 40 generations of inbreeding, with a very low incidence of spontaneous tumors.

Strain M.—Inbred since 1921. Better known as the "leaden strain," with over 40 generations of inbreeding and a medium to low incidence of spontaneous tumors. It should be mentioned that mice of the C57 brown, C57 black, and M strains are related.

Strain C.—Approximately 40 generations of inbreeding. The spontaneous tumor incidence is unknown.

Strain Y.—Inbred since 1925. Over 15 generations of inbreeding. There is a medium incidence of breast tumors in the females and a relatively high occurrence of spontaneous sarcoma of various types.

Strain I.—Inbred since 1927. The mice carry five recessive characters; namely, pink-eyed, dilute, brown, non-agouti, and piebald. Up to the present time no information has been presented as to the occurrence of spontaneous tumors in this stock.

The foregoing information has, for the most part, been obtained from publications and reports of the Roscoe B. Jackson Memorial

Laboratory. Mice of strains A, D, and M were obtained directly from that laboratory, while mice of strains C_3H, C57 brown, C57 black, C, and I were raised in this laboratory. All information regarding strain I mice was obtained from Dr. L. C. Strong, who originated the strain. All mice used in these investigations were approximately 3 months of age.

STRAINS OF TUMOR EMPLOYED

Two well-known inoculable mouse sarcomas were used. One of these, sarcoma 37, is known (*13*) as a rapidly growing tumor which induces a high degree of resistance in ordinary "market" mice. The other, sarcoma 180, is a highly malignant growth originating in the Crocker Institute for Cancer Research and is also capable of inducing immunity in mice (*1*). Both tumor strains have been propagated in this laboratory during the past 6 years.

It is essential to record that, during the past 3 years, both these tumors have been propagated almost exclusively in strain D mice. This fact may have important bearings upon the outcome of the experiments to be described; for, while experience in this laboratory (*2*) has shown that strain D mice are excellent soil for the propagation of transplantable tumors, it is also known that, after growing within the tissues of this strain, the tumor appears to show a diminished growth energy when implanted back into other strains. The influence that serial passage of a transplantable tumor in one strain of mice exerts upon its power of proliferation in other strains may be a promising field for investigation.

TECHNIQUES EMPLOYED FOR TUMOR INOCULATION

Two sites of implantation, cutaneous and subcutaneous, were used throughout the work. The method employed for implanting tumor tissue into the skin of mice is as follows: The hair over the abdomen is shaved 24 hours prior to inoculation. Tumor tissue free from necrotic material is passed through a fine mincing machine and inoculated by the use of a 1-cc tuberculin syringe and an 18- or 20-gage needle. Best results are obtained by inserting the needle just beneath the skin so that its bevel is plainly visible, and expelling a small amount of the minced tissue from the syringe. This method is referred to as cutaneous inoculation, and the resulting growths are designated as cutaneous tumors throughout this paper.

It is a little difficult to describe the site of growth following cutaneous inoculation. Obviously, it cannot be called intracutaneous, because of the thin epidermal layer of the mouse's skin and the fact that the tumors grow beneath the skin. Experience has shown that successful inoculation has been accomplished when the tumor is adherent to the skin but not adherent to the tissues over the abdomen, as revealed by

the ease with which it can be moved about. A tumor covered with loose skin and firmly imbedded beneath the skin should be regarded as growing subcutaneously.

Subcutaneous inoculations were all made into the right axillary region by the usual trocar technique. This method is referred to as subcutaneous inoculation, and the resulting growths are designated as subcutaneous tumors throughout this communication.

EXPERIMENTAL OBSERVATIONS

THE RESULTS OF CUTANEOUS INOCULATION WITH SARCOMA 37

Experiment 1.—On November 5, 1936, 176 mice representing strains M, C57 black, Y, C, I, C57 brown, C_3H, A, and D were inoculated cutaneously with sarcoma 37. One week later all the mice had well-developed cutaneous tumors, but there were apparent differences between the size of the tumors in the various strains. The strains were listed according to the size of the tumor by dividing them into four groups, with those having the largest tumors in group 1 and the smallest in group 4, as follows: Group 1—strains M, C57 black, and C57 brown; group 2—strains Y and A; group 3—strains C_3H and D; group 4—strains C and I.

Two weeks after inoculation the tumors were again examined and measured. Scab formation and dry hard tumors, which indicated regression were apparent in strains M, C57 black, C57 brown, I, C_3H, and A, while in strains Y, C, and D the tumors appeared to be growing progressively.

Three weeks after inoculation most of the tumors had regressed completely in strains M, C57 black, C57 brown, I, C_3H, and A, while those of the other 3 strains were growing and causing the death of the animals.

On December 2, 1936, all mice in which the tumor had receded spontaneously were tested for immunity by subcutaneous inoculation with sarcoma 37, and most of them were found to be resistant.

The results of the experiment can be summarized briefly as follows: The cutaneous tumors grew rapidly for about 10 days and then receded spontaneously in mice of strains M, C57 black, C57 brown, I, C_3H, and A, but grew progressively and killed the mice of strains Y, C, and D.

Experiment 2.—On December 11, 1936, mice of strains C, Y, I and M, totalling 39 animals, were inoculated cutaneously with sarcoma 37 in an effort to repeat experiment 1, and the results were practically identical with those of the earlier experiment. The tumor grew in all strains, receded in mice of strains M and I, but caused the death of all mice of strains C and Y. The surviving mice were subsequently tested for immunity by a single subcutaneous inoculation of sarcoma 37, and, as in experiment 1, practically all were resistant.

In order to present the results of experiments 1 and 2 without going into a lengthy description, they have been combined and are presented in table 1.

TABLE 1.—*Experiments 1 and 2. The results of cutaneous inoculation of pure-strain mice with sarcoma 37 and a subsequent immunity test*

Cutaneous inoculation—for natural resistance							Subcutaneous inoculation—for immunity		
Strain	Sex	Number of experiments	Number of mice inoculated	Average size of tumor, in mm, 2 weeks after inoculation	Number of mice killed by tumors [1]	Number of mice in which tumors regressed [1]	Number of mice tested	Number of mice immune	Percent immune
M	F	1	12	14 by 11	0	12	12	12	100
M	M	2	21	14 by 11	1	20	20	6	30
C57 black	F	1	12	14 by 10	0	12	12	12	100
C57 black	M	1	12	18 by 10	0	12	12	11	92
Y	F	2	24	20 by 13	24	0			
Y	M	1	6	20 by 14	6	0			
C	F	1	12	17 by 10	12	0			
C	M	2	22	20 by 16	22	0			
I	F	1	8	4 by 4	0	8	8	8	100
I	M	2	18	4 by 4	0	18	18	18	100
C57 brown	F	1	14	14 by 10	0	14	14	13	92
C57 brown	M	1	12	14 by 10	0	12	12	12	100
C_3H	M	1	14	17 by 10	0	14	14	14	100
A	M	1	14	19 by 10	3	11	11	11	100
D	M	1	14	16 by 12	14	0			

[1] Final results 4 weeks after cutaneous inoculation.

In table 1 it is seen that mice of strains Y, C, and D did not possess sufficient natural resistance to the growth of sarcoma 37 to cause its recession, while the other six strains were capable of overpowering the tumor. Attention is directed to column 5 of the table, in which is given the average size of the cutaneous tumors in each strain 2 weeks after implantation. The first figure is the average length of the tumors measured from their anterior to posterior ends and the second, their width laterally. The thickness of the growths is omitted because practically all were approximately 4 to 5 mm. Actually the measurements given represent the size of the tumor in practically all mice of each strain, for the uniformity in size of the cutaneous tumors in a given strain of mice throughout their course of growth or regression is a striking phenomenon. In those strains in which the tumor grew progressively, it often attained a size of 35 by 35 mm or more and became so large that the entire body of the mouse was lifted off the floor of the cage. On the other hand, when the tumors receded in a resistant strain from growths measuring 14 by 10 mm or more, the skin appeared normal and hair overgrew the site at which the tumors had developed and receded.

Column 5 of the table also shows that 2 weeks after implantation the cutaneous tumors of strain I mice were smaller than in any other strain, showing that these mice had more natural resistance to the

growth energy of sarcoma 37 than any of the other strains. The ability of this strain to resist growth of sarcoma 37 will be discussed later in connection with the results obtained with sarcoma 180.

THE RESULTS OF SUBCUTANEOUS INOCULATION WITH SARCOMA 37

Table 1 also includes the results of a single subcutaneous immunity test for all mice in which sarcoma 37 receded spontaneously in the skin. Practically all the mice, with the exception of strain M males, were resistant to this test. The reason that these mice failed to resist the immunity test is not clear, but the results with strain M mice are in accordance with earlier findings (*1*) when it was observed that female "market" mice were more easily immunized than males by caudal growth of sarcoma 180. However, the numbers of mice used in the studies reported here are too small to justify any definite conclusion.

While performing subcutaneous inoculations of the various strains for the purpose of determining whether or not the animals were immune, a group of normal controls were employed. This experiment yielded further evidence of natural resistance on the part of those strains tested. The experiment is described below.

Experiment 3.—Only male mice of the different strains were used and all were inoculated subcutaneously with sarcoma 37 on December 2, 1936. Records were taken of the size of the tumor at weekly intervals. A summary of the findings is presented in table 2.

TABLE 2.—*Experiment 3. The results of subcutaneous inoculation of pure strain mice with sarcoma 37*

Strain	Number of mice inoculated	Average size of tumors, in mm, 2 weeks after inoculation	Number of mice killed by tumors [1]	Number of mice in which tumors regressed	Percent in which tumors regressed
M	10	21 by 17 by 13	5	5	50
C57 black	10	23 by 16 by 11	2	8	80
I	5	14 by 14 by 7	0	5	100
C57 brown	10	21 by 17 by 13	8	2	20
A	10	15 by 14 by 14	10	0	0
C_3H	10	18 by 10 by 8	5	5	50
C	9	21 by 18 by 15	9	0	0

[1] Final results 8 weeks after subcutaneous inoculation.

Briefly, the findings in experiment 3, as recorded in table 2, tend to confirm the results of experiments 1 and 2. With the exception of strain A animals, all the strains which had proved to be resistant to cutaneous growth of sarcoma 37 also possessed some natural resistance to the same tumor when grown within their subcutaneous tissues, while all the mice of strain C succumbed to tumor growth.

In dealing with subcutaneous tumors the results were not as clear cut as with cutaneous tumors, which indicates that cutaneous tumors were better test objects for the presence of natural resistance than were subcutaneous growths.

THE RESULTS OF CUTANEOUS INOCULATION WITH SARCOMA 180

In conformity with the proposed plan of investigation already mentioned, a group of mice from various strains was tested for natural resistance to sarcoma 180 when implanted cutaneously.

Experiment 4.—A group of 180 mice divided equally as to sex and representing mice of strains M, C57 black, Y, C, C57 brown, C_3H, A, and D was inoculated cutaneously with sarcoma 180 on October 30, 1936. Details of the experiment are omitted because the tumor grew progressively in the skin of all the mice and killed practically every animal within 6 to 8 weeks. The results of the experiment are of interest, when compared with those of experiments 1 and 2, for they show a pronounced difference in the susceptibility of the various strains to the growth of the two tumors.

It is seen that animals of strain I were not included in experiment 4. In view of the pronounced resistance exhibited by this strain of mice to the growth of sarcoma 37, experiments were performed in which they were tested for natural resistance to sarcoma 180.

Experiment 5.—On February 3, 1937, a group of 9 strain I male mice received cutaneous implants of sarcoma 180. All grew the tumor, and at the end of the second week the average tumor size was 17 by 9 mm. The tumors grew slowly, averaging 21 by 14 mm at the end of the fourth week. When examined at the conclusion of the fifth week only 2 appeared to be growing, while the other 7 had begun to recede. The tumors in these 7 mice continued to recede and all had regressed completely by 8 weeks after inoculation. The remaining 2 mice succumbed to tumor growth.

Experiment 6.—Eleven male and 11 female mice of strain I and 13 strain M females were given a cutaneous inoculation of sarcoma 180 on April 8, 1937. All the animals developed cutaneous tumors, and those in strain M mice grew progressively and killed all their hosts within 8 weeks. The tumors in the strain I mice, however, grew for about 2 weeks, attaining an average size of 11 by 5 mm, and then began to recede. By the end of the fifth week, 19 of the cutaneous growths had regressed completely. All the mice were refractory to subcutaneous implantation of sarcoma 180 on May 17, 1937.

THE RESULTS OF SUBCUTANEOUS INOCULATION WITH SARCOMA 180

Since strain I mice had proved to be resistant to sarcoma 180 when grown cutaneously, the next step was to determine whether the mice of this strain would prove to be resistant to the same tumor when it was inoculated subcutaneously. Mouse sarcoma 180 is known to be a very malignant growth. During the past 6 years it has been propagated in this laboratory and has grown progressively in practically all

the inoculated animals with less than 1 percent of spontaneous regressions.

Experiment 7.—On February 3, 1937, 20 strain I males and 10 strain D males were inoculated subcutaneously with sarcoma 180. The tumor grew progressively in all of strain D mice and in 18 of the strain I mice, all of which succumbed to tumor growth within 6 weeks after inoculation. In each of the last 2 mice of strain I the tumor attained a size of 24 by 18 by 12 mm within 3 weeks after implantation but then regressed slowly and was gone completely 10 weeks after inoculation.

Experiment 8.—Twenty-four strain I mice (12 males and 12 females) and 6 strain D males were inoculated subcutaneously with sarcoma 180 on April 8, 1937. All 6 of the strain D controls and 20 of the strain I animals died from tumor growth within 8 weeks. In 4 of the strain I animals, consisting of 2 males and 2 females, the tumor grew for about 3 weeks but then began to recede and was gone 2 months after inoculation.

The outcome of the above series of investigations with sarcoma 180 shows that mice of strain I possess more natural resistance to the growth of sarcoma 180 than any of the other strains tested.

DISCUSSION

The findings in respect to sarcoma 37 afford evidence of the importance of the constitution of the inoculated animals in their natural resistance to cutaneous growth of this tumor, for in practically all individuals of 6 strains the tumor regressed spontaneously and in practically all members of 3 strains it grew progressively and killed its hosts. The use of subcutaneous inoculation gave similar findings so far as these 9 strains of mice were concerned, but the results were far less clear cut than when the tumor was grown cutaneously. Hence it may be concluded that the cutaneous growth of this tumor is a better test for the natural resistance of inoculated animals than its subcutaneous growth.

Although 6 of the 9 strains of mice had sufficient natural resistance to overcome the growth of sarcoma 37 when inoculated cutaneously, only one of these strains was able to resist the growth of sarcoma 180 when implanted into the same site. This difference might be attributed to a difference in the growth energy of the two tumors. Strain I mice were the only animals whose natural resistance was sufficient to cause regression of sarcoma 180, which is of special interest in view of the fact that sarcoma 180 is one of the most malignant of inoculable mouse tumors. Here again the use of cutaneous inoculation demonstrated the natural resistance of strain I mice far better than when subcutaneous inoculation was employed.

Strain I mice are of exceptional interest. The findings recorded in this paper show that they are very resistant to two well-known propagable tumors, and in this laboratory they have proved to be resistant to the carcinogenic activity of lard solutions of 1:2:5:6-dibenzanthracene when injected subcutaneously. The details of this work will be published later, but it is mentioned here as evidence of the natural resistance of this strain of mice. However, it must not be concluded that all strains exhibiting a high degree of natural resistance to transplantable growths are also resistant to induced growths, for strain Y mice have also been found to be extremely resistant to lard solutions of both 1:2:5:6-dibenzanthracene and methylcholanthrene; but, as revealed in this communication, they are very susceptible to the growth of sarcoma 37 and sarcoma 180.

It is also evident from the outcome of these experiments that the susceptibility of a strain of mice to the development of spontaneous neoplasms is of little importance in their response to inoculation with these propagable tumors. It is believed that, from the evidence available thus far, it is impossible to state with certainty that a strain of mice is resistant or susceptible to tumor growth in general.

The observations recorded in this paper show that the genetic constitution of the inoculated animal had a pronounced influence upon its natural resistance to the growth of the transplantable tumors. This factor has long been recognized by experienced investigators in the field of propagable neoplasms. Russell (*15*) recognized it as early as 1912, and Woglom (*18*) has advised the use of pure strain animals in such investigations. Selbie (*16*) is one of the more recent investigators to arrive at the same conclusion. Starting with a group of rats which were relatively insusceptible to inoculation with the Jensen rat sarcoma, he obtained, by selective inbreeding, a stock which was far more susceptible. It was then found that the susceptible strain was also more susceptible to the growth of other propagable rat tumors than was the parent stock, an observation which is in accord with findings in this laboratory (*2*) as regards strain D mice, which have proved to be very susceptible to various propagable tumors. Furthermore, the high degree of natural resistance possessed by strain I mice to both sarcoma 37 and sarcoma 180, as recorded herein, supports the view that certain strains of animals might have a general resistance or susceptibility to transplantable growths. Selbie concluded that "consistent results in experiments with transplantable tumours can be obtained only by using pure strains of animals."

It is worthy of note, however, that, although strain D mice appear to be very susceptible to certain well-known tumors which can be propagated in most strains of mice, they are very resistant to most tumors arising spontaneously in other pure lines of mice. The im-

portant contributions made by geneticists in this respect have been reviewed by Bittner (*11*).

In dealing with the production of concomitant immunity in these experiments, it may be said that the findings in this respect are in accord with those expressed previously; namely, that a strain of mice possessing a high degree of natural resistance to the growth of a certain tumor is able to acquire resistance to a greater extent than those which possess little or no natural resistance. This conclusion is also in harmony with the findings of Bittner (*10*).

Besredka (*4–8*) and his colleagues have used cutaneous growths of transplantable tumors to produce concomitant immunity in both mice and rabbits. When inoculated into the skin, the tumors grew for a while and then receded spontaneously, after which the animals were found to be immune to subsequent reinoculation. Nozu (*14*) also recorded the spontaneous recession of a transplantable rabbit tumor, following inoculation into the skin. Bessemans and Asaert (*9*), as well as Flaks and Grynkraut (*12*), were less successful in obtaining spontaneous recession and immunity. The difference in the results of these various investigators might be due to differences in natural resistance of the stock of animals into which the tumors were implanted.

SUMMARY

Two propagable sarcomas of mice, sarcoma 37 and sarcoma 180, both of which had undergone serial passage in one strain of mice for 3 years, were used in these investigations.

Nine strains of inbred mice have been employed in a study on natural resistance to these 2 transplantable tumors. It was found that when sarcoma 37 was implanted cutaneously into these mice, it grew rapidly in all the strains, but practically all members of 6 strains possessed sufficient natural resistance to bring about its complete regression, while the tumor grew progressively and caused the death of practically all members of the 3 other strains. Most mice in which the tumor had regressed were resistant to subsequent subcutaneous inoculation with the same tumor.

When sarcoma 180 was implanted cutaneously, it grew progressively and killed practically all the mice of 8 of the strains, but receded spontaneously in the majority of individuals of strain I.

Strain I mice possessed a high degree of natural resistance to both tumors, for they were highly resistant to cutaneous growth of both sarcoma 37 and sarcoma 180, as well as subcutaneous growth of sarcoma 37, and about 10 percent of them were resistant to subcutaneous growth of sarcoma 180.

The results of these experiments show that the genetic constitution of the inoculated mice is an important factor in determining their natural resistance to the test tumors. It is also indicated that cutaneous tumors are excellent test objects for the presence of natural resistance to propagable neoplasms of mice.

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DENTAL CARIES IN AMERICAN INDIAN CHILDREN

Studies of certain characteristics of prevalence and severity of dental caries among different population groups suggest that epidemiological investigations may make important contributions to the development of public health methods for control of this disease. Data bearing on this subject are presented in a recent bulletin[1] issued by the Public Health Service, which gives the dental status of 8,257 American Indian children who are members of 110 different Indian tribes and who live on 76 reservations in 16 different States in the United States. Prevalence and severity of attack by caries for children of each tribe and for aggregates of tribes living in six widely separated geographic localities are found to be markedly different. The highest and lowest rates of attack appear, respectively, among children living in the extreme northwestern and southwestern sections of the country. Attempts to correlate the differences in caries with climatic and dietary factors are inconclusive, but implications of the

[1] Dental Caries in American Indian Children. By Henry Klein, Associate Pharmacologist, and Carroll E. Palmer, Passed Assistant Surgeon, U. S. Public Health Service. Public Health Bulletin No. 239. Government Printing Office, Washington, D. C.

findings are discussed and suggestions are made regarding further studies.

DEATHS DURING WEEK ENDED DECEMBER 4, 1937

[From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended Dec. 4, 1937	Corresponding week, 1936
Data from 86 large cities of the United States:		
Total deaths	8,604	8,742
Average for 3 prior years	8,003	
Total deaths, first 48 weeks of year	411,018	411,884
Deaths under 1 year of age	565	527
Average for 3 prior years	510	
Deaths under 1 year of age, first 48 weeks of year	26,335	26,580
Data from industrial insurance companies:		
Policies in force	69,983,032	68,816,785
Number of death claims	13,230	11,873
Death claims per 1,000 policies in force, annual rate	9.9	9.0
Death claims per 1,000 policies, first 48 weeks of year, annual rate	9.7	9.7

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers.

In these and the following tables a zero (0) is to be interpreted to mean that no cases or deaths occurred, while leaders (.....) indicate that cases or deaths may have occurred although none was reported.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Dec. 11, 1937, and Dec. 12, 1936

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Dec. 11, 1937	Week ended Dec. 12, 1936	Week ended Dec. 11, 1937	Week ended Dec. 12, 1936	Week ended Dec. 11, 1937	Week ended Dec. 12, 1936	Week ended Dec. 11, 1937	Week ended Dec. 12, 1936
New England States:								
Maine	2	1	1	.....	42	37	0	1
New Hampshire	.....	.....	.....	.....	45	15	0	0
Vermont	2	.....	.....	.....	144	.....	0	0
Massachusetts	2	3	.....	.....	76	316	2	5
Rhode Island	.....	.....	.....	.....	1	12	0	0
Connecticut	7	2	5	2	9	93	2	0
Middle Atlantic States:								
New York	36	37	[1] 13	[1] 14	93	203	5	9
New Jersey	12	22	14	30	581	86	1	3
Pennsylvania	30	35	.....	.....	2,048	49	5	7
East North Central States:								
Ohio	44	24	23	25	249	20	6	11
Indiana	33	33	41	34	55	11	0	3
Illinois	37	33	30	45	754	15	1	2
Michigan	25	14	1	.....	238	34	1	1
Wisconsin	5	6	42	25	68	17	0	1
West North Central States:								
Minnesota	4	6	2	.....	9	41	1	0
Iowa	3	3	3	2	3	3	0	2
Missouri	37	15	74	55	913	1	1	1
North Dakota	2	2	6	.....	1	1	0	0
South Dakota	.....	.....	.....	.....	.....	.....	0	0
Nebraska	7	2	.....	.....	1	1	1	0
Kansas	9	12	10	3	37	6	1	5
South Atlantic States:								
Delaware	1	.....	.....	.....	3	21	0	1
Maryland [2]	23	15	15	10	14	111	2	5
District of Columbia	7	5	3	.....	6	1	0	1
Virginia	31	33	.....	.....	84	32	5	2
West Virginia	16	25	12	77	101	16	6	11
North Carolina [2]	44	76	7	6	396	18	4	5
South Carolina [2]	6	14	377	410	55	30	3	1
Georgia [2]	14	36	.....	.....	.....	.....	1	4
Florida [2]	23	7	9	6	42	6	0	1
East South Central States:								
Kentucky	17	29	15	29	83	10	0	8
Tennessee	27	23	81	93	168	4	1	2
Alabama [2]	27	36	192	189	17	2	11	1
Mississippi [2]	11	17	.....	.....	.....	.....	0	2

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Dec. 11, 1937, and Dec. 12, 1936—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Dec. 11, 1937	Week ended Dec. 12, 1936	Week ended Dec. 11, 1937	Week ended Dec. 12, 1936	Week ended Dec. 11, 1937	Week ended Dec. 12, 1936	Week ended Dec. 11, 1937	Week ended Dec. 12, 1936
West South Central States:								
Arkansas	15	6	82	47	43	2	0	1
Louisiana	28	14	323	9	1	2	1	1
Oklahoma [4]	24	5	44	51	3	4	1	2
Texas [3]	46	78	368	556	64	61	6	1
Mountain States:								
Montana		2		18	11		0	0
Idaho	2	1	5	11	13	133	0	1
Wyoming					1		0	0
Colorado	9	8			44	6	0	0
New Mexico	7	1		3	84	54	0	1
Arizona	2	7	92	46		70	1	0
Utah [3]					81	4	1	0
Pacific States:								
Washington	3	8		4	9	17	1	0
Oregon	7	1	21	44	12	8	0	2
California	20	52	52	127	28	13	2	2
Total	707	749	1,963	1,971	6,730	1,586	73	106
49 weeks of year	26,043	26,790	286,700	151,724	276,131	277,862	5,146	7,073

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid and paratyphoid fevers		Whooping cough
	Week ended Dec. 11, 1937	Week ended Dec. 12, 1936	Week ended Dec. 11, 1937	Week ended Dec. 12, 1936	Week ended Dec. 11, 1937	Week ended Dec. 12, 1936	Week ended Dec. 11, 1937	Week ended Dec. 12, 1936	Week ended Dec. 11, 1937
New England States:									
Maine	0	1	36	29	0	0	2	1	55
New Hampshire	0	0	24	11	0	0	0	1	2
Vermont	0	0	15	2	0	0	0	0	18
Massachusetts	0	0	174	158	0	0	6	2	217
Rhode Island	0	0	23	11	0	0	0	1	15
Connecticut	0	0	64	44	0	0	0	2	78
Middle Atlantic States:									
New York	2	0	405	453	0	8	7	9	388
New Jersey	0	0	103	84	0	0	3	2	133
Pennsylvania	2	1	421	364	0	0	19	27	323
East North Central States:									
Ohio	2	7	379	320	2	1	1	3	155
Indiana	1	0	181	152	41	3	5	3	18
Illinois	2	4	557	381	14	0	0	1	87
Michigan	1	2	416	370	0	2	0	11	175
Wisconsin	2	0	200	247	2	17	0	0	163
West North Central States:									
Minnesota	4	1	168	144	30	8	0	0	45
Iowa	1	1	184	94	46	11	0	1	31
Missouri	2	2	273	145	12	1	16	2	41
North Dakota	0	0	20	88	22	5	0	0	12
South Dakota	0	0	18	44	0	15	0	0	31
Nebraska	0	0	27	63	0	1	1	1	5
Kansas	0	5	151	214	5	13	0	9	77
South Atlantic States:									
Delaware	0	0	5	16	0	0	0	3	14
Maryland [3]	0	1	68	62	0	0	3	5	48
District of Columbia	0	0	12	10	0	0	2	1	4
Virginia	1	0	55	55	0	0	2	14	107
West Virginia	0	0	92	55	0	0	1	4	77
North Carolina [3]	0	0	59	65	0	0	4	9	246
South Carolina [3]	0	0	4	8	0	0	0	3	41
Georgia [3]	2	4	24	55	1	0	3	6	11
Florida [3]	0	0	6	5	3	0	2	3	1

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Dec. 11, 1937, and Dec. 12, 1936—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid and paratyphoid fevers		Whooping cough
	Week ended Dec. 11, 1937	Week ended Dec. 12, 1936	Week ended Dec. 11, 1937	Week ended Dec. 12, 1936	Week ended Dec. 11, 1937	Week ended Dec. 12, 1936	Week ended Dec. 11, 1937	Week ended Dec. 12, 1936	Week ended Dec. 11, 1937
East South Central States:									
Kentucky	1	1	68	68	0	0	1	9	58
Tennessee	[2] 2	3	45	54	2	0	3	14	34
Alabama [2]	0	1	18	27	0	0	2	3	19
Mississippi [2]	3	2	12	11	0	0	0	1	----
West South Central States:									
Arkansas	1	4	28	5	2	0	2	5	15
Louisiana	0	1	8	8	0	0	8	4	7
Oklahoma [4]	1	3	54	23	3	0	9	7	22
Texas [3]	7	4	100	130	2	0	24	14	131
Mountain States:									
Montana	0	0	30	68	28	18	3	3	24
Idaho	0	0	33	52	23	2	1	2	13
Wyoming	0	0	12	8	9	5	0	2	8
Colorado	0	2	27	66	22	4	2	0	9
New Mexico	1	3	16	15	0	0	7	13	29
Arizona	0	1	5	13	2	0	0	4	----
Utah [2]	1	0	51	18	1	0	0	0	12
Pacific States:									
Washington	1	0	67	57	39	9	0	1	86
Oregon	0	0	54	34	13	52	2	2	42
California	3	13	230	252	2	0	9	8	387
Total	43	67	5,022	4,658	326	175	144	216	3,514
49 weeks of year	9,359	4,407	209,505	219,399	10,097	6,953	14,699	14,252	----

[1] New York City only.
[2] Week ended earlier than Saturday.
[3] Typhus fever, week ended Dec. 11, 1937, 36 cases, as follows: North Carolina, 1; South Carolina, 3; Georgia, 19; Florida, 2; Alabama, 5; Texas, 6.
[4] Figures for 1936 are exclusive of Oklahoma City and Tulsa.
[5] 1 nonparalytic case included.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Meningococcus meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
October 1937										
Colorado	7	37	1	----	91	----	22	85	9	16
November 1937										
Arkansas	1	99	114	285	31	14	10	117	30	54
California	12	142	110	7	157	5	65	606	20	35
Colorado	1	29	----	----	115	----	9	131	13	3
Delaware	0	1	----	----	1	----	0	37	0	4
District of Columbia	3	33	1	----	12	----	0	54	0	1
Idaho	1	9	13	1	51	----	1	104	41	3
Iowa	5	17	2	----	17	----	22	746	152	7
Maine	0	4	6	1	154	----	2	104	0	6
Massachusetts	5	9	----	----	282	----	6	503	0	16
Missouri	6	196	119	23	1,921	1	14	791	31	35
Nebraska	3	22	17	----	8	----	13	117	1	5
New Jersey	8	86	55	1	949	----	4	296	0	16
Tennessee	17	106	229	37	310	9	6	209	14	29
West Virginia	12	96	96	----	313	2	1	404	0	23
Wyoming	0	----	----	----	2	----	0	35	29	2

Summary of monthly reports from States—Continued

October 1937	Cases
Colorado:	
Chicken pox	111
Dysentery (bacillary)	3
Encephalitis (epidemic or lethargic)	2
Mumps	24
Paratyphoid fever	1
Whooping cough	43
November 1937	
Actinomycosis:	
California	2
Tennessee	1
Anthrax:	
New Jersey	1
Chicken pox:	
Arkansas	39
California	1,065
Colorado	223
Delaware	37
District of Columbia	59
Idaho	150
Iowa	332
Maine	327
Massachusetts	972
Missouri	243
Nebraska	111
New Jersey	1,520
Tennessee	168
West Virginia	233
Wyoming	109
Conjunctivitis:	
Idaho	1
Dysentery:	
Arkansas (amoebic)	3
Arkansas (bacillary)	3
California (amoebic)	20
California (bacillary)	55
Colorado	1
Delaware (bacillary)	1
Massachusetts (bacillary)	37
Missouri	10
New Jersey (bacillary)	3
Tennessee (bacillary)	12
Encephalitis, epidemic or lethargic:	
California	1
District of Columbia	1
Iowa	3
Massachusetts	3
Missouri	3
New Jersey	1
Food poisoning:	
California	58
German measles:	
California	61
Idaho	1
Iowa	5
Maine	4

November 1937—Continued	Cases
German measles—Contd.	
Massachusetts	39
New Jersey	42
Tennessee	14
Granuloma, coccidioidal:	
California	4
Hookworm disease:	
Arkansas	3
Impetigo contagiosa:	
Tennessee	3
Jaundice, epidemic:	
California	4
Lead poisoning:	
Idaho	1
Massachusetts	1
Leprosy:	
California	2
Massachusetts	1
Mumps:	
Arkansas	13
California	974
Colorado	11
Delaware	23
Idaho	103
Iowa	32
Maine	264
Massachusetts	266
Missouri	45
Nebraska	24
New Jersey	353
Tennessee	79
West Virginia	3
Wyoming	35
Ophthalmia neonatorum:	
California	4
Massachusetts	101
Missouri	1
New Jersey	10
Tennessee	2
Paratyphoid fever:	
California	3
Massachusetts	5
New Jersey	1
Tennessee	3
Rabies in animals:	
Arkansas	25
California	145
Massachusetts	8
Missouri	6
New Jersey	3
West Virginia	3
Rocky Mountain spotted fever:	
Idaho	4
Septic sore throat:	
Arkansas	10
California	3
Idaho	2
Massachusetts	8
Missouri	44

November 1937—Continued	Cases
Septic sore throat—Contd.	
Nebraska	8
New Jersey	11
Tennessee	9
West Virginia	1
Wyoming	6
Tetanus:	
California	6
Tennessee	1
Trachoma:	
Arkansas	7
California	19
Idaho	1
Missouri	37
Tennessee	3
Trichinosis:	
California	4
Massachusetts	2
New Jersey	1
Tularaemia:	
Arkansas	3
California	1
Iowa	2
Missouri	7
Tennessee	2
West Virginia	2
Typhus fever:	
California	4
Tennessee	9
Undulant fever:	
Arkansas	3
California	17
Idaho	5
Iowa	18
Maine	2
Massachusetts	2
Missouri	1
New Jersey	2
Tennessee	1
Vincent's infection:	
Arkansas	1
Idaho	3
Maine	11
Tennessee	1
Whooping cough:	
Arkansas	95
California	1,002
Colorado	37
Delaware	15
District of Columbia	16
Idaho	51
Iowa	172
Maine	177
Massachusetts	471
Missouri	247
Nebraska	66
New Jersey	405
Tennessee	154
West Virginia	235
Wyoming	54

PLAGUE INFECTION IN FRESNO COUNTY, CALIF.

Under date of December 9, 1937, Dr. W. M. Dickie, Director of Public Health of California, reported that plague infection had been proved, by animal inoculation, in a lot of 5 *beecheyi* squirrels and in a lot of 6 golden-mantled squirrels collected on November 5 in the vicinity of Shaver Lake Post Office, Fresno County, Calif., and also in 63 fleas, in 3 lots, collected from 64 *beecheyi* squirrels received at the laboratory on November 5 from ranches 5 miles east and 1 and 2 miles south of Piedra, Fresno County, and from the Shaver Lake area.

WEEKLY REPORTS FROM CITIES

City reports for week ended Dec. 4, 1937

This table summarizes the reports received weekly from a selected list of 140 cities for the purpose of showing a cross section of the current urban incidence of the communicable diseases listed in the table. Weekly reports are received from about 700 cities, from which the data are tabulated and filed for reference.

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Data for 90 cities:											
5-year average	301	694	75	748	675	1,342	9	363	36	991	------
Current week [1]	195	195	44	1,790	577	1,137	3	346	45	1,001	------
Maine:											
Portland	0	------	0	0	2	0	0	1	0	11	23
New Hampshire:											
Concord	0	------	0	15	1	1	0	0	0	3	10
Manchester	0	------	0	0	1	3	0	0	0	0	10
Nashua	0	------	0	0	0	0	0	0	0	2	10
Vermont:											
Barre	0	------	0	48	0	0	0	0	0	0	2
Burlington	0	------	0	0	0	0	0	0	0	7	15
Rutland	0	------	0	1	0	0	0	0	0	9	6
Massachusetts:											
Boston	0	------	1	26	13	42	0	6	7	23	205
Fall River	0	------	0	0	2	2	0	1	0	33	16
Springfield	0	------	0	1	0	5	0	0	0	7	38
Worcester	0	------	0	0	3	2	0	0	2	14	46
Rhode Island:											
Pawtucket	0	------	0	0	0	5	0	0	1	0	18
Providence	0	------	0	0	7	13	0	2	0	25	59
Connecticut:											
Bridgeport	3	------	0	0	3	12	0	0	0	0	26
Hartford	0	1	0	3	1	21	0	0	0	5	36
New Haven	0	1	0	0	1	5	0	0	1	1	32
New York:											
Buffalo	0	------	2	1	14	15	0	12	0	24	142
New York	26	21	4	33	95	116	0	72	10	148	1,471
Rochester	1	2	0	0	6	3	0	0	0	2	73
Syracuse	0	------	0	0	1	8	0	0	0	0	59
New Jersey:											
Camden	0	------	1	0	2	2	0	1	0	0	30
Newark	0	3	1	6	12	6	0	9	0	13	98
Trenton	0	------	0	71	4	4	0	2	0	7	44
Pennsylvania:											
Philadelphia	5	2	1	37	32	50	0	24	10	31	526
Pittsburgh	3	5	3	308	19	31	0	2	0	37	170
Reading	0	------	0	1	0	1	0	1	0	0	29
Scranton	0	------	------	17	------	3	0	------	0	0	------
Ohio:											
Cincinnati	7	------	2	0	8	27	0	14	0	10	156
Cleveland	2	4	0	65	13	45	0	11	0	46	192
Columbus	0	------	0	4	4	8	0	4	0	2	101
Toledo	0	------	0	9	8	3	0	0	0	6	80
Indiana:											
Anderson	0	------	0	0	0	11	0	0	0	5	15
Fort Wayne	8	------	1	0	2	0	0	4	0	0	33
Indianapolis	6	------	1	1	13	14	0	5	0	2	121
Muncie	1	------	0	6	1	2	2	0	0	0	6
South Bend	0	------	0	0	2	2	0	0	0	0	13
Terre Taute	1	------	0	1	0	0	0	0	0	0	12
Illinois:											
Alton	0	------	0	76	0	5	0	0	0	1	9
Chicago	16	16	2	129	39	152	0	29	1	29	740
Elgin	0	------	0	0	2	5	0	0	0	2	8
Springfield	0	2	1	0	3	2	0	0	0	3	22
Michigan:											
Detroit	18	1	0	79	30	86	0	16	0	41	271
Flint	3	------	0	2	3	22	1	0	0	4	36
Grand Rapids	0	------	0	5	3	33	0	0	0	4	34
Wisconsin:											
Kenosha	0	------	0	0	0	1	0	0	0	0	6
Madison	0	------	0	0	0	0	0	3	0	4	16
Milwaukee	1	------	0	65	8	16	0	4	0	26	78
Racine	0	------	0	1	1	3	0	0	0	9	9
Superior	0	------	0	0	0	0	0	0	0	0	4

[1] Figures for St. Paul estimated; report not received.

City reports for week ended Dec. 4, 1937—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Minnesota:											
Duluth	0	----	0	0	0	7	0	2	0	13	25
Minneapolis	1	----	0	2	4	33	0	0	0	9	94
St. Paul	----	----	----	----	----	----	----	----	----	----	----
Iowa:											
Cedar Rapids	0	----	----	0	----	0	0	----	0	2	----
Davenport	0	----	----	0	----	1	0	----	0	0	----
Des Moines	0	----	----	2	----	34	0	----	0	0	33
Sioux City	0	----	----	0	----	3	1	----	0	3	----
Waterloo	1	----	----	0	----	4	0	----	0	1	----
Missouri:											
Kansas City	1	1	0	5	6	16	0	4	2	0	90
St. Joseph	1	----	0	0	2	2	0	0	0	0	22
St. Louis	14	----	1	688	5	51	0	6	0	3	210
North Dakota:											
Fargo	0	----	0	0	1	8	0	1	0	5	8
Grand Forks	0	----	----	0	----	9	1	----	0	1	----
Minot	0	----	----	0	----	4	0	----	0	2	4
South Dakota:											
Aberdeen	0	----	----	0	----	7	0	----	0	2	----
Sioux Falls	0	----	0	0	0	5	0	0	0	0	12
Nebraska:											
Lincoln	1	----	----	1	----	4	0	----	0	1	----
Omaha	7	----	0	0	6	7	0	2	0	0	58
Kansas:											
Lawrence	0	----	0	0	0	1	0	0	0	3	11
Topeka	0	----	0	0	4	1	0	0	0	13	28
Wichita	0	1	1	0	3	5	0	0	0	14	32
Delaware:											
Wilmington	0	----	0	0	7	3	0	1	0	5	41
Maryland:											
Baltimore	17	2	1	3	16	39	0	15	0	65	232
Cumberland	0	----	0	1	2	1	0	0	0	1	9
Frederick	0	----	0	0	0	0	0	0	0	0	3
Dist. of Columbia:											
Washington	6	1	1	5	11	17	0	8	0	5	162
Virginia:											
Lynchburg	4	----	0	0	1	4	0	1	1	1	14
Norfolk	0	----	0	0	1	4	0	2	0	0	28
Richmond	1	----	0	0	3	9	0	1	0	0	48
Roanoke	1	----	1	0	0	0	0	1	0	4	6
West Virginia:											
Charleston	0	----	0	1	6	2	0	2	0	0	31
Huntington	1	----	----	7	----	2	0	----	0	0	----
Wheeling	0	1	0	1	1	3	0	0	0	17	15
North Carolina:											
Gastonia	0	----	----	1	----	0	0	----	0	0	----
Raleigh	0	----	0	0	2	3	0	0	0	16	11
Wilmington	1	----	0	0	2	0	0	0	0	15	14
Winston-Salem	0	----	0	2	0	3	0	0	0	13	11
South Carolina:											
Charleston	0	29	1	10	3	5	0	0	0	0	30
Florence	0	----	0	0	2	2	0	1	0	0	14
Greenville	0	----	0	0	1	0	0	0	0	4	2
Georgia:											
Atlanta	1	31	3	24	16	7	0	3	0	9	84
Brunswick	0	----	0	0	1	0	0	0	0	0	6
Savannah	0	42	3	0	3	1	0	2	0	0	30
Florida:											
Miami	0	1	0	32	3	2	0	2	2	0	33
Tampa	1	----	0	1	5	2	0	1	0	0	28
Kentucky:											
Covington	0	----	0	0	1	0	0	2	0	0	15
Lexington	0	----	0	3	3	0	0	2	0	7	22
Tennessee:											
Knoxville	3	2	1	0	1	3	0	0	0	0	23
Memphis	0	----	1	66	2	4	0	4	0	9	58
Nashville	4	----	1	0	3	4	0	2	0	7	51
Alabama:											
Birmingham	4	5	2	14	6	6	0	3	0	0	68
Mobile	0	1	0	0	2	1	0	0	0	0	25
Montgomery	0	----	----	0	----	1	0	----	0	21	----
Arkansas:											
Fort Smith	1	----	----	0	----	3	0	----	0	0	----
Little Rock	0	----	0	2	0	3	0	2	0	0	3
Louisiana:											
Lake Charles	0	----	0	0	0	0	0	0	0	2	3
New Orleans	8	3	1	0	20	8	0	4	1	23	155
Shreveport	0	----	0	0	6	2	0	5	2	0	56

City reports for week ended Dec. 4, 1937—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Oklahoma:											
Muskogee	0	------	------	0	------	1	0	------	0	0	------
Tulsa	2	------	------	1	------	5	0	------	0	13	------
Texas:											
Dallas	5	1	1	0	4	5	0	2	0	0	56
Fort Worth	1	------	0	0	3	8	0	2	0	7	47
Galveston	3	------	0	0	8	2	0	0	0	0	23
Houston	3	3	0	2	7	7	0	3	1	6	71
San Antonio	1	------	1	1	11	1	0	10	1	0	75
Montana:											
Billings	0	------	0	1	0	0	0	0	0	0	3
Great Falls	0	------	0	1	0	2	1	0	0	13	7
Helena	0	------	0	2	0	0	0	0	0	6	------
Missoula	0	------	0	0	1	0	0	0	0	0	11
Idaho:											
Boise	0	------	0	0	0	0	0	0	0	0	4
Colorado:											
Colorado Springs	0	------	0	0	3	3	0	2	0	0	12
Denver	2	------	1	47	4	20	0	7	1	3	90
Pueblo	1	------	0	0	3	2	1	0	0	0	7
New Mexico:											
Albuquerque	1	------	0	18	2	0	0	1	0	0	11
Utah:											
Salt Lake City	0	------	0	1	3	25	0	0	0	1	37
Washington:											
Seattle	0	------	0	0	4	5	0	4	0	14	104
Spokane	0	------	0	0	3	2	0	1	0	10	51
Tacoma	0	------	0	0	1	7	0	0	0	22	22
Oregon:											
Portland	3	------	0	0	4	15	0	5	0	2	77
Salem	0	1	------	0	------	0	0	------	0	0	------
California:											
Los Angeles	7	12	4	5	19	22	0	16	1	24	388
Sacramento	0	------	0	1	4	2	0	3	0	44	26
San Francisco	1	4	0	1	7	12	0	8	4	47	166

State and city	Meningococcus meningitis		Poliomyelitis cases	State and city	Meningococcus meningitis		Poliomyelitis cases
	Cases	Deaths			Cases	Deaths	
Massachusetts:				District of Columbia:			
Boston	1	1	0	Washington	3	1	0
Rhode Island:				Virginia:			
Providence	1	0	0	Lynchburg	1	0	0
New York:				Richmond	1	0	0
Buffalo	2	0	0	South Carolina:			
New York	5	2	1	Charleston	1	0	0
Rochester	0	1	0	Alabama:			
Syracuse	0	0	1	Birmingham	0	0	1
New Jersey:				Tennessee:			
Trenton	0	1	0	Memphis	1	0	0
Pennsylvania:				Louisiana:			
Philadelphia	0	0	1	Shreveport	0	4	0
Pittsburgh	1	1	0	Texas:			
Ohio:				Dallas	1	0	0
Cleveland	1	0	0	Houston	0	0	1
Toledo	0	0	1	Colorado:			
Illinois:				Denver	1	0	1
Chicago	1	0	1	Washington:			
Wisconsin:				Seattle	1	0	0
Milwaukee	0	0	1	Oregon:			
Minnesota:				Portland	1	0	1
Minneapolis	0	0	1	California:			
Missouri:				Los Angeles	1	1	2
Kansas City	1	0	1				
Maryland:							
Baltimore	3	0	0				

Dengue.—Cases: Charleston, S. C., 1.
Encephalitis, epidemic or lethargic.—Cases: New York, 2.
Pellagra.—Cases: Atlanta, 2; Savannah, 4; San Francisco, 1.
Typhus fever.—Cases: Charleston, S. C., 2; Tampa, 1; Montgomery, 2; Houston, 1.

FOREIGN AND INSULAR

CANADA

Provinces—Communicable diseases—2 weeks ended November 20, 1937.—During the 2 weeks ended November 20, 1937, cases of certain communicable diseases were reported by the Department of Pensions and National Health of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Cerebrospinal meningitis				2	2					4
Chicken pox		25		211	367	161	72	26	149	1,011
Diphtheria		5	19	155	22	4	6			211
Dysentery				2	6					8
Erysipelas				5	3	4	4	4	2	22
Influenza		9		9	24		1		19	62
Lethargic encephalitis							1			1
Measles		9	10	185	250	5	48	28	260	795
Mumps		22			168	24	4	1	29	248
Paratyphoid fever					9			1		10
Pneumonia	3	1			28				26	58
Poliomyelitis			4	1	23	4	35	3	1	71
Scarlet fever	2	22	12	301	252	63	76	80	52	860
Tuberculosis	3	76	22	92	86	4	21	4	22	330
Typhoid fever		3	2	160	19	2	5		8	199
Undulant fever				1						1
Whooping cough		23		459	177	104	12	19	53	847

JAMAICA

Communicable diseases—4 weeks ended November 27, 1937.—During the 4 weeks ended November 27, 1937, cases of certain communicable diseases were reported in Kingston, Jamaica, and in the island outside of Kingston, as follows:

Disease	Kingston	Other localities	Disease	Kingston	Other localities
Cerebrospinal meningitis		1	Leprosy		2
Chicken pox	1	10	Puerperal fever		1
Diphtheria		5	Scarlet fever		4
Dysentery	8	2	Tuberculosis	30	69
Erysipelas		4	Typhoid fever	9	86

LATVIA

Notifiable diseases—July–September 1937.—During the months of July, August, and September 1937, cases of certain notifiable diseases were reported in Latvia as follows:

Disease	July	August	September
Anthrax			1
Botulism	5	1	3
Cerebrospinal meningitis	5	1	4
Diphtheria	38	68	77
Dysentery		5	1
Erysipelas	45	29	42
Influenza	40	49	57
Lead poisoning	2	1	
Leprosy			1
Lethargic encephalitis	1	1	2
Malaria	1		
Measles	1	3	4
Mumps	18	5	4
Paratyphoid fever	7	10	17
Poliomyelitis	3	8	11
Puerperal septicemia	7	11	11
Scarlet fever	244	189	283
Tetanus	2	3	5
Trachoma	30	41	56
Tuberculosis	277	264	310
Typhoid fever	64	64	102
Typhus fever			1
Whooping cough	277	219	147

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

NOTE.—A table giving current information of the world prevalence of quarantinable diseases appeared in the PUBLIC HEALTH REPORTS for November 26, 1937, pages 1738–1752. A similar cumulative table will appear in future issues of the PUBLIC HEALTH REPORTS for the last Friday of each month.

Cholera

China.—Cholera has been reported in China as follows: Week ended November 20, 1937, Swatow, 42 cases; week ended December 4, 1937, Shanghai, 6 cases.

French Indochina.—Cholera has been reported in French Indochina as follows: Hanoi, week ended November 20, 106 cases; week ended November 27, 77 cases. During the week ended December 4, Annam, 40 cases; Haiphong, 1 case; Hanoi, 21 cases; Tonkin Province, 274 cases.

Plague

Hawaii Territory.—Plague-infected rats have been reported in Hawaii Territory as follows: Island of Hawaii, Hamakua District, Hamakua Mill Sector, 1 rat, November 29; 1 rat, November 30; 2 rats, December 1; 2 rats, December 2; 1 rat, December 3. Island of Maui, Makawao District, 1 rat, December 3, 1937.

United States—California.—A report of plague infection in California appears on page 1900 of this issue of PUBLIC HEALTH REPORTS.

Smallpox

Great Britain—England and Wales—Chester County.—During the week ended November 20, 1937, 1 case of smallpox was reported in Chester County, England.

Mexico—Vera Cruz.—During the week ended December 4, 1937, 1 case of smallpox was reported in Vera Cruz, Mexico.

Typhus Fever

Great Britain—England and Wales—Gloucester County.—During the week ended November 20, 1937, 1 case of typhus fever was reported in Gloucester County, England.

Mexico—Chihuahua.—During the week ended November 27, 1937, 2 cases of typhus fever were reported in Chihuahua, Mexico.